Abuses of stock option grants are perceived to have spread like a virus among high-technology companies. But a new study suggests that hundreds of old-economy companies may also have caught the backdating bug.

In a paper to be released today, researchers estimate that 590 nontechnology companies appear to have manipulated options so their chief executives received them at the lowest price of the month. That compares with 130 technology companies that appear to have backdated their chief executives’ options to a monthly low during a 10-year period to the end of 2005.

Traditional manufacturing and service firms make up the bulk of publicly traded companies, so it comes as no surprise that the sheer number of manipulated grants outside the technology sector is larger.

Yet old-economy companies also appear to have made improper grants somewhat less frequently than their new-economy peers, making patterns more difficult to find. That combination, the researchers suggest, has allowed old-line companies to escape much of the scrutiny.

The study is the latest in a series of papers by academic and governance research groups that attempt to measure the extent of the backdating scandal and to explain how it spread. More than 120 companies are under investigation by the Securities and Exchange Commission. The Justice Department and Internal Revenue Service are conducting separate reviews. More than 50 executives and directors have been forced out or fired as a result.

Even as companies like UnitedHealth Group and KB Home have reported options-related problems and ousted their top executives, many observers still consider backdating a hangover from the dot-com boom.

Most companies that have come forward so far appear to be concentrated around Silicon Valley and other technology hot spots. They include a large number of software and semiconductor companies, with a big portion of their executives’ total pay apparently coming from equity grants.

But the study suggests that the problem was more widespread.

Of the roughly 1,150 options grants that the researchers believe were manipulated, an estimated 950, or 80 percent, were at nontechnology companies.

“It is not the case that people should concentrate on new-economy firms,” said Lucian Bebchuk, a Harvard Law School professor and director of its corporate governance program. “That is the impression that one might get from the cases that have come under scrutiny thus far.”
Professor Bebchuk co-wrote the study with Yaniv Grinstein, a Cornell University professor, and Urs Peyer of the French business school Insead. It is to be posted today on the Web site of the Harvard Law School corporate governance program.

The study also questions the notion that companies backdated stock options as a tax-efficient method of compensation. Backdated gains, in this view, were simply a substitute for offering executives more cash.

The analysis found that this was not the case. “C.E.O.’s who got lucky grants also received higher levels of other forms of compensation relative to peer companies,” Professor Bebchuk said.

The researchers said the study underscored the importance of having independent directors to counter the influence of the chief executive. A company that had a majority of independent directors on its board reduced the chances that it engaged in manipulation by more than a third, according to a statistical analysis in the report.

In their study, the researchers examined some 19,000 options grants at about 5,800 companies from 1996 to the end of 2005. They found evidence suggesting that nearly 12 percent, or about 720, of the companies appear to have made at least one options grant that occurred at the lowest price of the month because of manipulation. That number may expand by several hundred companies if the second- and third-lowest prices of the month are included.

Still, the new figure is significantly smaller than the estimate that more than 2,000 companies, or 29.2 percent of companies in the study, engaged in backdating to sweeten their executives’ pay. That finding, based on a similar data analysis, was released this summer by Randall Herron, an Indiana University finance professor, and Erik Lie, a University of Iowa finance professor whose research is widely credited with provoking the inquiries into options grants.

The study by Professors Herron and Lie found that the abuse was more prevalent in high-technology firms, where an estimated 32 percent of unscheduled grants were backdated; at other firms, an estimated 20 percent were backdated.

Professor Bebchuk’s group found a much lower level of manipulation and a narrower difference between old- and new-economy companies. In his study, the percentage of all grants that were in the month’s lowest price because of manipulation was 5.7 percent for nontechnology firms, compared with 6.1 percent for the entire sample.

The discrepancy between the two studies probably results from their different starting points and approaches. Professors Herron and Lie searched for differences in backdating patterns between new- and old-economy companies by observing abnormal returns before and after an options grant date for corporate insiders. Professor Bebchuk’s team focused on the grants awarded to chief executives at monthly lows, which were most likely to be manipulated, and then on the differences between technology companies and nontechnology companies.